ELECTRONICS AND COMMUNICATIONS IN JAPAN

Part 1: Communications

VOLUME 70

CONTENTS FOR 1987

NUMBER 1

Page

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Hitoshi Honma and Masahiko Sagawa: Improving the Accuracy of Polynomial Interpolation Using the FFT 1
Eiji Watanabe and Akinori Nishihara: Extended Design of Digital Lattice Filters . . 11
Keiichiro Koga, Norikazu Yamasaki and Takuro Muratani: An Efficient Decoding Method for Multiple Error Correcting Binary BCH Code 21
Hideo Nakano, Satoru Tateishi and Yoshiro Nakanishi: An Analysis of Local Neighborhood Search Method for 0-1 Knapsack Problem 31
Tsunehiro Munakata and Yuso Nishida: Suboptical Minimal-Time Control to Discrete Quantized Linear Control Systems with Integer Coefficients 42

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Sinichi Furukawa, Takashi Hinata and Toshio Hosono: Design Method for Single-Mode Optical Fibers with Zero Total Dispersion at Wavelengths of 1.3 μm and 1.55 μm . . 50
Sachihiro Toyoda: Multiple-Diode Reflection-Type Amplifiers Using IMPATT-Diode . . . 59
Naoki Inagaki: Glide Symmetry and Radiation Characteristics of Magnetic-Current Antennas of Transmission-Line Type — Coaxial Structure 67
Chikato Fujiwara, Shoichi Hosokawa, Kasumi Yamashita and Yongliang Ruan: Analysis of CSMA-CD with Variable Slot Size 77
Yoshihiro Niitsu: Evaluation of the Movable Boundary Scheme in Circuit and Packet Switched Networks 87
Takunori Mashiko and Saburo Adachi: Shield Effect of Cylindrical Mesh Around Cylindrical Human Model 97
Hirohisa Sano and Sadao Kurazono: Analysis of Dielectric Waveguide Problem by Boundary Element Method 107

NUMBER 2

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Masami Kuramitsu, Fuyuto Takase, and Hiroyuki Nitta: Phenomenon of Synchronization in a Multimode Oscillator with Rational Ratio Frequencies 1

ELECTRONICS AND COMMUNICATIONS IN JAPAN

Part 1: Communications

VOLUME 70

CONTENTS FOR 1987

NUMBER 1

Page

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Hitoshi Honma and Masahiko Sagawa: Improving the Accuracy of Polynomial Interpolation Using the FFT 1
Eiji Watanabe and Akinori Nishihara: Extended Design of Digital Lattice Filters . . 11
Keiichiro Koga, Norikazu Yamasaki and Takuro Muratani: An Efficient Decoding Method for Multiple Error Correcting Binary BCH Code 21
Hideo Nakano, Satoru Tateishi and Yoshiro Nakanishi: An Analysis of Local Neighborhood Search Method for 0-1 Knapsack Problem 31
Tsunehiro Munakata and Yuso Nishida: Suboptical Minimal-Time Control to Discrete Quantized Linear Control Systems with Integer Coefficients 42

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Sinichi Furukawa, Takashi Hinata and Toshio Hosono: Design Method for Single-Mode Optical Fibers with Zero Total Dispersion at Wavelengths of 1.3 μm and 1.55 μm . . 50
Sachihiro Toyoda: Multiple-Diode Reflection-Type Amplifiers Using IMPATT-Diode . . . 59
Naoki Inagaki: Glide Symmetry and Radiation Characteristics of Magnetic-Current Antennas of Transmission-Line Type — Coaxial Structure 67
Chikato Fujiwara, Shoichi Hosokawa, Kasumi Yamashita and Yongliang Ruan: Analysis of CSMA-CD with Variable Slot Size 77
Yoshihiro Niitsu: Evaluation of the Movable Boundary Scheme in Circuit and Packet Switched Networks 87
Takunori Mashiko and Saburo Adachi: Shield Effect of Cylindrical Mesh Around Cylindrical Human Model 97
Hirohisa Sano and Sadao Kurazono: Analysis of Dielectric Waveguide Problem by Boundary Element Method 107

NUMBER 2

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Masami Kuramitsu, Fuyuto Takase, and Hiroyuki Nitta: Phenomenon of Synchronization in a Multimode Oscillator with Rational Ratio Frequencies 1

Page

Hitoshi Suzuki, Takao Nishizeki, and Nobuji Saito: An Algorithm for Multicommodity Flows in a Class of Planar Networks 11
Tadahiro Takase, Masato Nagasawa, and Chiaki Ito: Synthesis of Impedance Transformable Filter by Artificial Nonuniform Transmission Line with Distortionless Property . . . 19
Masatoshi Sakawa and Hitoshi Yano: An Interactive Fuzzy Satisficing Method for Multiobjective Nonlinear Programming Problems with Fuzzy Parameters 25
Mineo Kaneko and Mahoki Onoda: A Signal-Flow Graph Representation for Switched-Capacitance Networks and Its Application to SC Circuit Design 35

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Shogo Kozaki and Makoto Ohki: A Consideration in Wave Optics on Partial Reflection by a Gaussian Beam Propagating through a Square-Law Medium 46
George Kimura: Analysis of the CSMA/CD Protocol with Deterministic Contention Resolution 57
Masaharu Komatsu and Wataru Mayeda: Priority Exhaustive-Service-Type Multipacket Transmission 66
Minoru Akiyama, Yoshiaki Tanaka, Julio Seguel, and Hideaki Fukushima: Traffic Analysis of TSTST Time Division Speech Paths 77
Kiyoshi Fukui, Shigeji Nogi, and Toru Sato: Stable Power-Combining Mode Operation of a Cylindrical Cavity Multiple-Device Oscillator 85
Yoshio Kage, Kazuo Aoki, and Kuniaki: Scattering of a Plane Electromagnetic Wave by the Discontinuity of Impedance Planes 95
Nozomu Hasebe, Hiroshi Sugiyama, Akio Kuramoto, and Morio Onoe: Radar Reflector with Bidirectional Communication Capability 103
Yoji Nagasawa and Risaburo Sato: A Method for Determining the Absorbing Clamp Position in the Detection of Power Line Induced Noise 112

NUMBER 3

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Tomohiko Uyematsu and Kohichi Sakaniwa: A Method for Signal Approximation Using Minimum Norm Signal 1
Haruhisa Takahashi and Haruo Akimaru: A Formula for Mean Queue Length of $GI_1GI_2/G_1G_2/1$ Preemptive-Resume Priority Queues 11
Sung-Chu Hsueh, Yoshi-aki Baba and Shin-ichi Takahashi: Design of Two-Dimensional Digital Fan Filters with Complex Coefficients Using 90-Degree Phase-Difference Network 20
Masayuki Kawamata and Tatsuo Higuchi: Minimum Round-off Noise Realizations of Separable-Denominator Two-Dimensional Digital Filters 29
Satoshi Imai and Chieko Furuichi: Impulse Train Equivalent Excitation Signals for High-Quality Speech Synthesis 41

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Makoto Miyake, Tadashi Fujino, Yoshiaki Umeda, Eizo Yamazaki and Ken-ichi Fujiwara: Performance of a Coded 8PSK Modem with a Viterbi Decorder Using Simplified Metric Calculation 54
Takashi Nakamura, Takehiro Abeta and Senji Yokokawa: Folded Antenna Loaded with a Dipole for Circular Polarization 66
Jun-ichi Kikuchi, Motoyuki Sato, Yoji Nagasawa and Risaburo Sato: A Proposal for Searching for Electromagnetic Wave Sources by Using a Synthetic Aperture Technique . 75
Kaoru Kurosawa, Jinhui Chao and Shigeo Tsujii: An IIR-Type Echo Canceller Using a Two-Channel Lattice Filter 86

Page

Tomofumi Ohishi and Mikio Takahara: Evaluation of EDB Code in Optical Fiber Communication Systems 93
Koichi Hirayama, Masanori Koshiba and Michio Suzuki: Finite-Element Analysis of Discontinuities in a Dielectric Slab Waveguide 102
Nobuo Kuwaki and Masaji Sato: Crosstalk Attenuation Characteristics of Unshielded Flat Cables Considering Earth Effect 112

NUMBER 4

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Koichi Hashimoto and Hidenori Kimura: A Parallel Architecture for Recursive Least Square Method 1
Kimio Sato and Rikio Onodera: General Expressions for the Numbers of Spanning Trees in Interative Graphs Classified by Contact Patterns of Cells 12
Takashi Shimamoto, Akio Sakamoto and Akio Ushida: On Routability for Channel Routing Problem 25
Takashi Nakamura, Azuma Ohuchi and Ikuo Kaji: Markov Chain Analysis of a Single-Stage Transfer-Type Automated Manufacturing System—Two-Machine Parallel System 35
Itsuo Kumazawa and Taizo Ijima: A Design Technique for Adaptive Filter Using Lattice Elements as Adaptation Modules 45
Munehiro Goto: Examples of Single-Error-Correcting Perfect BCD-AN Codes 55

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Noburo Schibuya, Haruo Takagi, Kayoko Kumamoto, Tsuyoshi Homma and Kenichi Ito: Crosstalk Noise Analysis of Wiring on a Printed Circuit Board 63
Yoshiya Miyagaki and Kenichi Konishi: Performance of Matched Filter Detection for Multiphase DPSK Signal in Satellite-Aircraft Multipath Channel 74
Toshitaka Kojima, Akihiko Ishikura, Masafumi Ieguchi and Toshihiro Moriyuki: Scattering of Hermite-Gaussian Beam Waves by Two Parallel Conducting Cylinders 84
Shigeru Ono, Noriaki Kondoh, Masaki Kobayashi and Masayasu Hata: A New Automatic Equalizer for Digital Subscriber Loops 93
Makoto Tsutsumi, Katsuyuki Tanaka and Nobuaki Kumagai: Loss Reduction of the Magnetostatic Forward Volume Wave Delay Line Using the YIG Film 103
Yoji Nagasawa, Jun'ichi Kikuchi and Risaburo Sato: Experiment on Searching for Electromagnetic Wave Sources by Using a Synthetic Aperture Technique 111

NUMBER 5

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Shoji Shinoda and Masakazu Sengoku: Concept of Space Modification and a Theory of Function Measuring the Centrality (or Mediality) of a Point in a Network 1
Minoru Kohata, Hideaki Sone, Hiroshi Echigo, and Tasuku Takagi: Vector Quantization of Speech Signals Using Principal Component Analysis 16
Yukihiro Nishida, Ichiro Asada, Masato Nakajima and Shin-ichi Yuta: Optical Observation of Finite Amplitude Ultrasonic Fields 27
Takashi Kurosu: A Method Using a Trial Function with Unknowns to Solve Approximately Fredholm Integral Equations of the First Kind 36
Satoshi Ichikawa and Yuichi Nakamura: Numerical Analysis of Transmission Lines with Branches and Junctions 47

Page

Koichi Hashimoto and Hidenori Kimura: An Adaptive Equalizer Based on Parallel Computation Scheme 58

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Osamu Hashimoto and Yasutaka Shimizu: Reflecting Characteristics of Anisotropic Rubber Sheets and Measurement of Complex Permittivity Tensor 67
George Kimura: An Analysis of the Multi-Channel CSMA/CD Protocol by Non-Slotted Model 78
Katsusuke Tajima and Shin-ichi Iiguchi: Analysis of Electromagnetic Wave Scattered from Cylinders Buried in the Ground 86
Yoshio Nikawa, Shinsaku Mori, Tohru Katsumata and Makoto Kikuchi: Both E- and H-Plane Converging Lens Applicator for Deep and Localized Microwave Hyperthermia . . 95
Kiyoharu Aizawa, Hiroshi Harashima and Hiroshi Miyakawa: Adaptive Vector Quantization of Picture Signals in Discrete Cosine Transform Domain 105
Tsukasa Iwama, Matsuo Sekine and Toshimitsu Musha: Suppression of Ground Clutter Using an X-Band Radar 115

NUMBER 6

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Shoichiro Yamada, Katsumi Harashima and Tamotsu Kasai: Analysis of a Heuristic Algorithm for Planar Assignment Problem 1
Yoshihiko Suzuki and Satoshi Ueno: A Numerical Calculation Method for Nonlinear Equations from Geometrical Viewpoints 11
Tetsuo Nishi and Takushi Kunihiro: Synthesis of Stray-Insensitive Switched-Capacitor Circuits Which Realize Several Transfer Functions Simultaneously 21
Mitsuo Okine: Synthesis of Active R Allpass Networks 32
Shigetaka Takagi and Nobuo Fujii: A Realization of High-Frequency Active *RC* Bandpass Filters Using Voltage Followers 44
Takuro Kida: The Optimum Interpolatory Approximation of Waves Using Time Limited Interpolation Functions 54
Yoshihiro Tanada: Sets of Cyclically Orthogonal Multilevel Sequences Derived from Monomial Phase 65

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Takaaki Hasegawa and Masao Nakagawa: Performance Degradation of PN Matched Filter with Clock Frequency Offset and Its Compensation 76
Yukiji Yamauchi, Masashi Sato and Toshihiko Namekawa: In-House Wireless Optical Digital SSMA 87
Tadatoshi Umehara: Four-Polarizations Filter for Frequency Reuse 102
Akira Matsushima and Tokuya Itakura: Accurate Numerical Analysis of Inductive Windows in a Rectangular Waveguide by Singular Integral Equations 111
Mitsuhiro Yokota, Takashi Takenaka and Otozo Fukumitsu: Scattering of Hermite-Gaussian Beams by Parallel Conducting Cylinders 122

NUMBER 7

Page

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Akira Hayashi: Quantization Error in Differential PCM of Laplacian Increment Inputs 1
Masakazu Sengoku, Kazuhito Kobayashi, and Shoji Shinoda: Radius and Diameter with Respect to Edges in a Nondirected Graph, and Upper and Lower Bounds for the Diameter 9
Jiro Shimonishi, Takao Hinamoto, and Sadao Maekawa: Inversion for 2-D Systems 20
Masayuki Ishikawa: Synthesis of Switched-Capacitor Filter Using Voltage and Charge Variables 29
Takao Hinamoto, Kazuhiko Akeno, and Sadao Maekawa: A Frequency-Domain Design of Two-Dimensional Recursive Digital Filters 37
Kenji Onaga: Scheduling of Extended Marked Graphs 48

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Ichiro Yamashita and Koji Kikushima: Statistical Design Method of Loss Budget for the Optical subscriber Transmission System 61
Hiroomi Hikawa: All-Digital Phase-Locked with a Wide Locking Range 70
Takahiro Saito, Hideya Takeo, Kiyoharu Aizawa, Hiroshi Harashima, and Hiroshi Miyakawa: Discrete Cosine Transform Coding with Gain/Shape Vecotr Quantizers for Picture Signals 78
Tatsuya Kashiwa, Norinobu Yoshida, and Ichiro Fukai: Unified Analysis of Ridge-Waveguide Slot Antenna in Three-Dimensional Space and Time 88
Osamu Hashimoto and Yasutaka Shimizu: Reflecting Characteristics of Lossy Anisotropic Materials Inserted into the Rectangular Waveguide 98

NUMBER 8

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Ikuo Kitagaki: Development of Several OHP Equipment of Physics Using Moiré Patterns 1
Masashi Takeuchi and Yutaka Itoh: Centrality Functions Defined by Minimum Cuts in a Network 11
Takuro Kida and Yutaka Fukuda: Design of Digital Nyquist Filters Based on the Measure of Squared Errors at Sampling Points 22
Masayuki Ishikawa: Low-Sensitivity Switched-Capacitor Integrators 32
Kunikatsu Kobayashi and Nobuji Saito: A Class of Nonuniform Coupled Transmission Lines and Their Equivalent Circuits 41
Masayuki Kimura, Hideki Imai and Yasunori Dohi: Systolic Decoder for Reed-Solomon Codes 50
Hiroshi Sasano, Masao Kasahara and Toshihiko Namekawa: Decoding Error Probability of Maximum Likelihood Decoders on Intersymbol Interference Channels 61

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Kamenosuke Yasuura (deceased) and Masanao Murayama: Numerical Analysis of Diffraction from a Sinusoidal Metal Grating 70

Page

Shunichiro Egami and Makoto Kawai: Multiport Power Combining Transmitter for Multibeam Satellite Communications 79
Shuji Tasaka and Hiroshi Ishikawa: Performance Analysis of a Buffered CSMA/CD System 86
Eiji Hagiwara, Yoshiyuki Yasuda and Hiraku Mishima: Optimized Equivalent-Weight Budget Design of Communication Satellite in Multibeam Mobile Satellite Communication System 99
Akira Komiyama: Arrangement of Sources in the Charge Simulation Method and Singularities of Solutions of the Helmholtz Equation. Scattering by a Perfectly Conducting Cylinder of Electromagnetic Waves Radiated from a Line Source 109
Manabu Kondou, Shigeru Fukuda and Kenichi Kagoshima: Radiation Characteristics of Reflector Antenna with Radome at 10 ~ 30 GHz in Rainy Conditions 119

NUMBER 9

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Kohshi Okumura, Akira Kishima, and Shuichi Saeki: Improvement of Algorithm Using Interval Analysis for Solution of Nonlinear Circuit Equations 1
Hisao Kuwabara and Kengo Ohgushi: Role of Formant Frequencies and Bandwidths in Speaker Perception 11
Showko Shiokawa, Toyosaka Moriizumi and Tsuneo Kikuchi: Ultrasonic Cell with IDT's for Measurement of Liquid Acoustic Velocity 22
Itsuo Kumazawa and Taizo Ijima: Vowel Recognition Using an LPC Deviation Model . . 30
Kiyonori Yoshida: Computational Accuracy in Determining the Sign of an Algebraic Quantity 44
Youichi Higashiyama and Hiromu Ariyoshi: A Method for Reducing the Number of Product Terms in a Symbolic Reliability Expression 50
Takashi Fujii, Hideya Horikawa, Tohru Kikuno and Noriyoshi Yoshida: Time Complexity of Gate Assignment Problem in One-Dimensional Array 59

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Satoru Ohta and Hiromi Ueda: A Rearrangement Algorithm for Three-Stage Switching Networks 68
Fumiaki Machihara: $\Sigma GI^{[X_i]}/M/S/K$ Queues with Mixed Batch Renewal Inputs 78
Aiguo He and Akira Kawamata: A Multiplexing System for Digital Transmission and Process in Vehicles 87
Masaaki Katayama, Norihiko Morinaga and Toshihiko Namekawa: Transmission Characteristics of PSK Signals in Satellite Communication with Nonlinearity and Bandwidth Limitation 95
Ki-Chai Kim and Shinobu Tokumaru: Small-Sized Waveguides with Periodically Loaded Posts 107
Satoshi Maruyama, Yasunori Iwanami and Tetsuo Ikeda: A Reduction Method of Tracking Errors Due to Multipath Waves in Direct Sequence Spread Spectrum Systems 118

NUMBER 10

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Kohshi Okumura, Akira Kishima, and Hisashi Yasuda: Numerical Method for Analyzing Transient and Steady States of Sine Wave Oscillator Circuit with Stiffness 1
Tsuyoshi Takebe and Toyoji Matsumoto: Design of IIR Nyquist Filter Pairs with Equi-Ripple Stopband Attenuation 12

Page

Yoji Kajitani, Katsufumi Tsuji, and Ray R. Chen: Minimum Confluent Cut of a Directed Graph and Its Application to the Block Replacement Problem in VLSI Design 22
Tadashi Yamaguchi and Ikuo Kaji: Some Location Problems on Grid Graphs 31
Hiroshi Nagaoka: Mullis-Roberts-Type Approximation for Continuous-Time Linear Systems 41
Tohru Kohda and Kenji Murao: Time Series Analysis of $1/f$ Noise with Its Unbounded Invariant Density 53

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Kunitoshi Nishikawa and Yoshikazu Asano: Analysis of Mobile Antenna in UHF Band . . 64
Yukio Inoue and Junzo Hirano: Traffic Characteristics of Digital Pair-Loop Network in Common Usage of Channels 75
Tomiji Soga, Teruhiro Kubota, and Tadashi Ohta: Electronic Switching Software Structure Considering Virtualizing Technique and Software Components 83
Yasushi Yamao: Design of Digital Signal Processing Quadrature Modulator for Digital FM and Analog FM Signals 95
Hiroyuki Umeda: Phase Regeneration Characteristic of a Three-Mode Oscillator with Second and Third Harmonic Resonators 107
Mitsuo Taguchi, Shigeru Egashira, and Tatsuru Ohzono: Analysis of Sleeve Antenna with Ground Wires 117

NUMBER 11

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Hideo Murakami: Multiple FIR Digital Filters on a Complex Integer Residue Ring . . 1
Shun-ichi Amari: Data Compression and Statistical Inference 16
Yuji Suzuki and Hiroshi Shimizu: Reflection of Surface Acoustic Waves from Gratings on the Surface of Piezoelectric Substrates 25
Akira Yamada and Hiroshi Shimizu: Accurate Analysis of $\Delta v/v$ Surface Acoustic Waveguides on a Piezoelectric Anisotropic Substrate 38
Yukinori Fukagawa, Torao Yanaru and Sho Yoshida: Non-Preemptive Priority Queue with Server's Walking Process 49
Yukinori Fukagawa, Torao Yanaru and Sho Yoshida: A Queueing System with Server's Walking-Time and Serial Service 58
Masakiyo Suzuki, Nobuo Nagai and Nobuhiro Miki: A Consideration for the Interpolation Problem with First- and Second-Order Information 68

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Kou Miyake: Analysis for Loss System with Finite Sources Which Require Several Channels Simultaneously 81
Masayoshi Ohashi and Yasuo Hirata: Estimation of Bit Error Rate Performance of Sequential Decoding 90
Satoshi Ishibashi and Kenji Ogura: Hierarchical Coding Method of Still Pictures with Component Separation 97
Takashi Nakamura and Senji Yokokawa: Loop Antenna with a Branch Wire for Circular Polarization 110
Keishi Habara and Katsuaki Kikuchi: Optical Switching Networks Using Tree-Structured Waveguide Optical Switches 118

NUMBER 12

Page

PART A

Electromagnetic Theory, Acoustics, Circuit Theory, Communications Theory, Mathematics and Physics

Eiji Watanabe and Akinori Nishihara: Equivalent Transformations and Sensitivity of Wave Digital Filters 1
Shinji Shinnaka: Design of Discrete-Time Recurrent Control Systems 11
Yoichi Jyo, Hiroshi Ikeda, Suemitsu Minamoto and Yoshiaki Kojima: A Method of Yield Analysis for Analog-Integrated Circuits Using Spherical Surface Random Numbers 20
Yujiro Inouye and Koichi Kato: Matrix-Fraction Descriptions and the McMillan Form of a Transfer Function Meromorphic in the Unit Disk 29
Takao Hinamoto, Takashi Hamanaka and Sadao Maekawa: Synthesis of Three-Dimensional Separable-Denominator Digital Filters with Minimum Roundoff Noise 42

PART B

Switching Systems, Video Communication, Microwaves and Millimeter Waves, Antennas and Propagation, Transmission Systems and Electronic Circuits

Shunichiro Egami and Makato Kawai: An Array Fed Multibeam Antenna Using Equal Phase-Shift Active Elements 53
Nobumoto Yamane, Yoshitaka Morikawa and Hiroshi Hamada: A New Image Data Compression Method—Extrapolative Prediction-Discrete Sine Transform Coding (in the Case of One-Dimensional Coding) 61
Katsumi Fukumoto and Masamitsu Nakajima: Coupling Coefficients and Injection-Locking Characteristics of Microwave Oscillators 75
Hiroji Kusaka, Yoshihito Simazaki and Fujio Nishida: Power Spectrum, Anti-Intercept and SN Ratio Characteristics of Direct Sequence Spread Spectrum Communication Systems using FIR and IIR Filters 84
Shigeru Makino, Yuji Kobayashi, Shuji Urasaki and Takashi Katagi: Beam Scanning Characteristics of Front Fed Offset Casegrain-Type Multibeam Antenna 95
Toshihiro Nomoto: A Low-Loss 6-Pole Canonical Dual-Mode Filter for the Output Multiplexer of Broadcasting Satellite Transponders in the 12-GHz Band 105